ABSTRACT

An electric motor with rotor being a drive wheel. The drive wheel has one or more permanent magnets attached to said drive wheel with opposite magnetic poles adjacent to one another. One or more electromagnets are attached to the structure to which the drive wheel is rotatably connected. A sensor determines the location of the permanent magnets. This information is utilized to assure that the electromagnets are energized only when the resultant magnetic fields will interact with the magnetic fields of the permanent magnet to produce a force on the drive wheel that will cause rotation in the desired direction. Three principal embodiments are employed. In a first embodiment, a computer periodically activates a switch to send pulsed voltage to the electromagnets; the percentage of the period of each pulse during which the voltage is non-zero determines the speed of the drive wheel. In a second embodiment, the computer is replaced with a timing circuit that controls the switch. And in a third embodiment, the output from the sensor directly controls the switch.